

Application No. 09/749,059

REMARKS

Claims 1-19 are pending.

Claims 1-19 are subject to a restriction-election requirement.

Claims 15-19 have been withdrawn from consideration.

CLAIM OBJECTIONS

Applicant thanks the Examiner for renumbering misnumbered claims 13-20 to 12-19.

CLAIMS REJECTIONS – 35 U.S.C. §102

Claims 1 and 3-9 were rejected under 35 U.S.C. 102(b) as being anticipated by Krause, et al (USP 4,281,934). Claim 1 is amended, however, to clarify several features embodied by the present invention. Specifically, the axis of connection under the present invention varies along n axis different from the x-axis and z-axis as defined in the Specification. In contrast, Krause teaches and discloses a socket connector aligned parallel to the x-axis of the shank. The advantages of the embodiments of the present invention over the connector mechanism of Krause include the ability to manipulate and orient the collision surface along a wide variety of axes, thereby enabling a wider variation of collision profiles using the same tool. Additionally, the socket connector of Krause is optimal for a tool primarily oriented along the axis of the socket connector itself. If the collision surface has any significant profile above or below this axis, then rotation and impact within the blender imparts significant torque on the connector itself. In contrast, a connector oriented at a different angle as embodied in the present invention enables management of higher torque upon the collision surface. Examples of suitable connector mechanisms are shown in Figures 4 and 5. Specific examples are claimed in claims 2, amended claim 3, and 8-10. In particular, amended claim 3 claims a connector with an axis of connection variable primarily along the y-axis. Such a connector orientation inherently directs a portion of impact

Application No. 09/749,059

forces away from the axis of the connector and into the orthogonal axis of the center shank. Such higher torque capability better enables tool configurations that include arms for offsetting the collision surface from the x-axis of the tool as claimed in claim 6 and 8. In sum, Krause neither anticipates nor renders obvious the embodiments claimed by Claims 1 and 11 as amended and all those claims that depend therefrom.

Claims 1, 3, 4, 7, 9, and 11-14 were rejected under 35 U.S.C. 102(b) as being anticipated by Noda, et al (USP 5,785,424). Noda fails to supply the features of Claims 1 and 11 that Krause failed to teach or disclose. Indeed, the connector orientation of Noda is identical to the orientation of Krause. In sum, Noda does not teach or disclose the embodiments and features of the present invention.

Claims 1, 2, 4, 6, and 11-13 were rejected under 35 U.S.C. 102(b) as being anticipated by Gabriele (USP 5,009,510). Gabriele discloses a tool that serves as a scraper tool rather than a collision surface within a blender. As such, Gabriele on its face does not disclose or teach a key element of claims 1 and 11 as originally filed and of each claim that depends upon claim 1 or 11. Moreover, claims 1 and 11 are amended to require the collision surface to be in a fixed position during rotation. Gabriele, of course, teaches directly away from such fixed position since its spring biased connector is designed specifically to allow its scraper tool to move in conformance with the walls of the blending vessel. Lastly, the very function of Gabrielle as a scraper tool requires that Gabrielle's flexible connector mechanism enable movement along the plane of rotation in order to maintain contact with the walls of the vessel. In contrast, embodiments of the present invention are designed specifically away from such orientation in order to better enable maintaining the collision surface in a fixed position notwithstanding greater torque forces. In sum, Gabriele teaches away from the amended claims 1 and 11 and cannot support a rejection of claims 1 or 11 under 35 U.S.C. 102(b) or 35 U.S.C. 103.

Claims 1, 3-9 and 11-14 were rejected under 35 U.S.C. 102(b) as being anticipated by Jones (USP 739,422). The connector mechanism of Jones similarly enables adjustment of the tool along only one axis and does not effectively

Application No. 09/749,059

manage high torque forces on the tool. Specifically, the connector in Jones enables tool blade reorientation only within the plane of rotation. This is, of course, the plane of maximum torque forces, and for any given connector and locking mechanism, the management of torque is minimized. Thus, Jones does not anticipate the features of the present invention.

Claims 1, 3, 4, 6-9, and 11-14 were rejected under 35 U.S.C. 102(b) as being anticipated by Austin (USP 3,245,663). The connector mechanism in Austin shares the same orientation and limitations as the mechanism in Krause. For the same reasons, Austin does not anticipate the features of the present invention.

In sum, none of the art cited in the first Office Action anticipates the features of claims 1 and 3-14 which are currently in the Application.

ELECTION/RESTRICTION

Applicants hereby elect with traverse, prosecution of Group I, claims 1-14, drawn to a blending tool and a blending machine and withdrawal of Group II, claims 15-19 drawn to a method of making toners, under the restriction requirement.

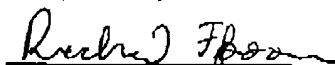
The restriction requirement under 35 U.S.C. §121 between the Group I-14, drawn to a blending tool and a blending machine and withdrawal of Group II, claims 15-19 drawn to a method of making toners is respectfully traversed, particularly since it is believed that these claims are sufficiently related to permit them to be retained in the same application, and an undue burden would not be placed on the Examiner to simultaneously examine and process these claims. Nevertheless, Applicant confirms the provisional election with traverse of the Group I claims drawn to a blending tool and a blending machine. Group II claims have been withdrawn from further consideration by the Applicants as being directed to a non-elected invention.

The application and claims are believed to be in a condition for allowance in their present form and which allowance is respectfully requested.

Application No. 09/749,059

In the event the Examiner considers personal contact advantageous to the disposition of this case, the Examiner is hereby authorized to call Applicant's Attorney, Richard Spooner, at Telephone Number (585) 423-5324, Rochester, New York.

Respectfully submitted,



Richard F. Spooner
Attorney for Applicant
Registration No. 43,928

RFS/pn
Xerox Corporation
Xerox Square 20A
Rochester, New York 14644

Application No. 09/749,059

VERSION WITH MARKINGS TO SHOW CHANGES MADE:

IN THE SPECIFICATION:

Amended paragraph on page 1, beginning at line 11:

U.S. Serial No. [09/not yet assigned] 09/748,920 filed December 27, 2000 [(Atty. Docket D/A0433)] entitled "BLENDING TOOL WITH AN ENLARGED COLLISION SURFACE FOR INCREASED BLEND INTENSITY AND METHOD OF BLENDING TONERS" and U.S. Serial No. [09/not yet assigned, filed concurrently herewith (Atty. Docket D/A0433Q1)] 10/024,196 filed December 21, 2001, entitled "AN IMPROVED TONER WITH INCREASED AMOUNT OF SURFACE ADDITIVES AND INCREASED SURFACE ADDITIVE ADHESION.

Please substitute the following amended paragraph for the pending paragraph beginning on page 4, line 1:

Most high-speed blending tools of the prior art do not have raised vertical elements such as surfaces [19] 19A and 19B (collectively "surface 19") shown in Figure 2. Instead, a typical blending tool has a collision surface formed simply by the leading edge of its central shank 20. In many tools, the leading edge is rounded or arcuately shaped in order to avoid a "snow plow" effect wherein particles become caked upon a flat leading face much as snow is compressed and forms piles in front of a snow plow. The tool shown in Figure 2 attempts to avoid this snow plow effect on raised collision surfaces 19 by slanting the forward face of surfaces 19 at an acute angle, thereby causing particles to either bounce upward from the tool or be swept by friction upward along the face of the tool until carried over its top and into the lee of the tool. However, a problem with the tool shown in Figure 2 and with other tools in the prior art is that an enlarged collision surface tends to create vortices in the wake of the tool as well as to decrease the overall density of particles in the zone 22 behind the tool. The degree of such density variations depends primarily upon the speed of the tool through the particle mixture as well as the height, width, and depth of the collision surface 19.

Application No. 09/749,059

Amended paragraph on page 11, beginning at line 21:

Other aspects of the present invention will become apparent as the following description proceeds and upon reference to the drawings, in which:

Figure 1 is a schematic elevational view of a blending machine of the prior art;

Figure 2 is a perspective view of a blending tool of the prior art;

Figure[.] 3 is a perspective view of an embodiment of the blending tool of the present invention;

Figure[.] 4 is a perspective view of an embodiment of the blending tool of the present invention having an adjustable articulator hinge;

Figure 5 is a perspective view of an embodiment of an articulator hinge of the present invention; and

Figure[.] 6 is a chart showing specific power levels of the blending motor when using different configurations of the blending tool of the present invention and when using a conventional tool of the prior art.

Amended paragraph on page 14, beginning at line 26:

Yet another aspect of the present invention is a blending tool that allows reconfiguration of the effective collision surface size and profile without removal of the entire tool. Referring to Figure 4, blending tool 30 comprises a center shank 31 and collision plates 35A and 35B. Center shank 31 contains locking fixture 32 at its middle for mounting onto rotating drive shaft 14 (not shown) of the blending machine 2 (not shown). Each end of center shank 31 contains a connecting mechanism 33 for rigidly mounting and holding an arm [34] shown, respectively as 34A and 34B. Connecting mechanism 33 shown in Figure 4 comprises a simple nut and bolt fastener which compresses together and rigidly positions collision plates 35A and 35B on arms 34A and 34B and on center shank 31, respectively. As will be described more fully below, below, different arrangements for positioning arms 34A and 34B are possible. Additionally, different

Application No. 09/749,059

arrangements for an adjustable collision surface are possible. For instance, each end region of the center shank 31 could comprise a leading edge flap connected to the center shank by one, two, or more connector mechanisms such that the angle of the flaps could be tilted down or raised much like the leading edge slat of some high speed jets and airplanes

Amended paragraph on page 16, beginning at line 14:

An example of an alternate embodiment of an articulator hinge 33 is shown in Figure 5. The embodiment shown in Figure 5 allows articulation of arm 34 into pre-set positions determined by alignment of bolt 45 (which runs through [hole 46] a hole in arm 34) with bored holes 41, 42, 43, and 44 formed in central hub 35. The process of articulating the hinge to these pre-set angles is accomplished by the relatively easy loosening and withdrawal bolt 45. As bolt 45 becomes withdrawn, arm 34 can be repositioned such that bolt 45 aligns with and can be inserted into one of alternate holes 41, 42, 43, and 44. Lastly, arm 34 is again secured in place by refastening bolt 45.

Amended paragraph on page 18, beginning at line 3:

The flexibility of the blending tool of the present invention is demonstrated in Figure 6, which shows the various levels of intensity that were obtained with the tool of the present invention as it is reconfigured into different positions. Each of the 4 curves shown on Figure [5] 6 show data created during blending of Xerox toner for a Xerox Docucenter 265 multifunctional printer in a Henschel 75-liter blender. Four blends were made, all using the same tool speed. The vertical axis measures the specific power of the blending motor (W/lb) which, as discussed above, is considered a good measure of the blend intensity when using an efficient blending tool. The horizontal axis measures time of the blend. The curve marked with round data points shows the results with arm 34 set at 45 degrees, which angle offered the greatest tool profile for this experiment. As can be seen in Figure 6, this curve with [square] round data points, reflecting the largest

Application No. 09/749,059

profile, shows the greatest blend intensity. The curve marked with diamond data points shows the results with arm 34 set at 22.5 degrees, while the curve marked with triangular data points shows the results with arm 34 set at 0 degrees. These angles cause decreasing tool profiles and, as expected, decreasing blend intensity that reflects the decreased profiles. Lastly, the curve with square shaped data points shows the results using a standard Henschel blending tool typically used when blending electrophotographic toners (this tool differs from the tool in [figure] Figure 2). When compared to the results using the 45-degree arm position, the standard tool provided less than 50% of the blend intensity offered by the tool of the present invention at its maximum profile and intensity. Such results are to be expected since conventional tools lack both collision plates and accurate trailing surfaces.

Application No. 09/749,059

IN THE CLAIMS:

1) (Amended) An improved blending tool for rotation in a blending machine wherein the plane of rotation defines a z-axis, comprising:

(a) a center shank having an x-axis orthogonal to the z-axis of rotation;

(b) a collision surface having a collision profile; and

(c) a connector mechanism connecting the collision surface to the center shank, for [said connector mechanism being capable of] connecting the collision surface to the center shank in different positions fixed during rotation of the tool such that the collision profile of the collision surface varies with different positions of connection, said connector mechanism having an axis of connection substantially different from both the x-axis and z-axis.

Claim 2 has been cancelled.

3) (Amended) The blending tool of **claim 1** wherein the axis of connection is adjustable primarily along a y-axis defined as the axis orthogonal to the x-axis and the z-axis [position of the collision surface in relation to the center shank is rigidly fixed during rotation of the tool].

Application No. 09/749,059

10) (Amended) [The blending tool of **claim 9**, further comprising:]

An improved blending tool for rotation in a blending machine wherein the plane of rotation defines a z-axis, comprising:

(a) a center shank having an x-axis orthogonal to the z-axis of rotation;

(b) a collision surface having a collision profile;

(c) a connector mechanism connecting the collision surface to the center shank, for connecting the collision surface to the center shank in one of a plurality of preset positions that are fixed during rotation of the tool such that the collision profile of the collision surface varies with different positions of connection, said connector mechanism having an axis of connection substantially different from both the x-axis and the y-axis;

([a]d) at least one arm having a first and second end wherein the first end is connected to the center shank and the second end is connected to the collision surface and wherein the arm has a plurality of through holes;

([b] e) a central hub having a plurality of pre-set positional holes; and

([c] f) a bolt for rigidly holding the arm in positional relationship to the central hub when said bolt is inserted through the hole in the arm and into an aligned positional hole on the central hub.

Application No. 09/749,059

- 11) (Amended) A blending machine, comprising:
- (a) a vessel for holding the media to be blended;
 - (b) a rotatable drive shaft inside of the vessel, for transmitting rotational motion to the blending tool, wherein the plane of rotation defines a z-axis; and
 - (c) a blending tool mounted to the drive shaft inside the vessel, said blending tool comprising a center shank having an x-axis orthogonal to the z-axis of rotation, a collision surface having a collision profile, and a connector mechanism connecting the collision surface to the center shank for [, said connector mechanism being capable of] connecting the collision surface to the center shank in different positions during rotation of the tool such that the collision profile of the collision surface varies with different positions of connection[:], said connector mechanism having an axis of connection substantially different from both the x-axis and z-axis. [; and
 - (c) a rotatable drive shaft, connected to the blending tool inside of the vessel, for transmitting rotational motion to the blending tool].

Claims 12 and 13 have been cancelled.

- 14) The blending machine of **claim [12] 11**, wherein the collision surface of the blending tool comprises a collision plate spaced apart and rigidly connected to the center shank of the blending tool during rotation of the tool.